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SUBSTITUTE SPECIFICATION (Marked-Up Version)

This Substitute Specification contains no new matter.

A CARTRIDGE GUN PISTOL WITH A CARTRIDGE HOLDER

10 **CROSS REFERENCE TO RELATED APPLICATIONS**

This application claims priority under 35 U.S.C. §365(a) to International Patent Application No. PCT/IB2005/000947, filed April 6, 2005, and under 35 U.S.C. §120 to International Patent Application No. PCT/IB2005/000947, filed April 6, 2005, which claims priority to Swiss Patent Application No. 00619/04, filed April 8, 2004.

15

FIELD OF THE INVENTION

~~[0001]~~ The invention generally relates to a cartridge gun with a cartridge holder ~~according to the preamble of claim 1.~~

20 **BACKGROUND OF THE INVENTION**

~~[0002]~~ Cartridge guns, also known as cartridge presses, are known in the art, and may be ~~which are also designated as cartridge presses and are~~ used for pressing out pasty materials from cartridges, e.g. sealing materials, adhesive materials, and ~~or~~ the like. ~~Such pressing tools~~ In general, these cartridge presses comprise a shell for receiving ~~the a~~ cartridge ~~whose~~ wherein the shape of the shell matches is adjusted to the external shape of the cartridge. ~~The one face~~ One side of the shell is fastened to the handle of the cartridge press. ~~The face side and~~ comprises a recess in which ~~the a~~ pressure rod with the stamp attached thereto is displaceable. The opposite ~~face~~ side of the cartridge press is slotted, so that the tip of the cartridge which comprises a displaceable floor acting as a piston can be placed in said slot.

30 The pressure rod, comprising an actuating member in the form of a swivelable trigger lever, can be ~~is~~ pushed forward by a gun-like actuating or triggering mechanism ~~which comprises an actuating member in the form of a swivelable trigger lever.~~ The pressure rod is moved ~~forward~~ a short step forward during each triggering movement. ~~For this purpose the~~ The actuating mechanism comprises an advancing element which is pushed forward by the

5 manual movement of the actuating member and entrains the pressure rod. When the actuating member is released, the advancing element slides ~~empty~~ back onto the pressure rod.

~~[0003]~~ A major disadvantage in ~~said known~~ the above-described cartridge holders presses is their overall size, resulting in added ~~and the thus resulting~~ weight of the cartridge presses gun. The ~~configuration of the~~ cartridge holder is generally made of sheet metal or the like,
10 which results in ~~leads to~~ a relatively high consumption of material. Approximately half the material required for such cartridge presses is used for the construction of the cartridge holder, which ~~obviously~~ has an effect on the overall weight of the cartridge gun. A reduction of the share of material of the cartridge holder and a ~~thus ensuing~~ reduction in the weight is therefore desirable. A further disadvantage of these cartridge holders is that the insertion and
15 removal of the cartridges is cumbersome because they frequently jam ~~tend to get jammed~~.

~~[0004]~~ A ~~hand press gun is known from~~ DE G89 01 028.0 discloses a hand press gun, in which a screw cap with an inside thread is attached to the face side of a gun grip, into which a threaded ring with an external thread and axial bore is screwed. The cartridge, ~~which~~
~~comprises~~ comprising a flange at the rear end, is pushed from behind through the threaded
20 ring until the flange abuts on the rear side of the threaded ring. ~~Thereafter the , and the~~
threaded ring is screwed into the screw cap.

~~[0005]~~ The ~~publication~~ EP-A2-1 034 847 discloses a cartridge press with a cartridge holder comprising claws ~~whose~~ having free ends which engage in the outside wall of a cartridge pushed into the holder. The claws dig slightly into the material of the cartridge, so that the
25 cartridge is held in a secure manner. A displaceable sleeve is pressed against the cartridge holder and against the claws for removing the cartridge from the cartridge holder, as a result of ~~which the same releases the cartridge~~, and the cartridge can be pulled from the cartridge holder.

~~[0006]~~ The above-mentioned hand press ~~guns~~ gun and cartridge press have the disadvantage
30 in ~~come with the disadvantage~~ that the exchange of cartridges is cumbersome and time-consuming. A threaded ring or a sleeve needs to be unscrewed first or actuated before the cartridge can be removed from the cartridge holder. This manipulation is cumbersome because ~~one would actually~~ the process requires ~~require~~ three actions: ~~hands, namely for~~

5 holding the gun, for unscrewing the threaded ring and pressing the cartridge against the claws, and a further hand for removing the empty cartridge from the cartridge gun.

~~[0007] The invention is therefore based on the object of providing a cartridge gun with a cartridge holder which requires little material and allows a simple exchange of the cartridges.~~

~~[0008] This object is achieved by a cartridge press with the features of claim 1.~~

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SUMMARY OF THE INVENTION

A cartridge gun comprising a cartridge holder is provided. The inventive cartridge gun requires little material and allows a simple exchange of cartridges. ~~[0009] It is the principle of the invention that the~~ The cartridge receiver only consists of ~~gun comprises a~~
15 piston rod and a base in which the lower end of a cartridge is insertable. Gripping elements are arranged in the base which engage in the inside wall of the inserted cartridge and hold the cartridge. ~~For the purpose of releasing~~ To release the gripping elements, the piston rod is withdrawn completely from the cartridge until a stamp arranged at the front end of the piston rod presses back the gripping elements from the gripping position and releases the cartridge
20 for removal. The advantage of such a cartridge gun is that the cartridge receiver, comprising a base, ~~only consists of a base and~~ does not extend over the entire length of the cartridge to be inserted therein. Material is saved by omitting a shell construction for the cartridge holder. The overall weight of the cartridge gun can thus be kept low. The cartridge gun further comprises an actuating device for displacing the piston rod, which allows ~~displacing the~~
25 displacement of the piston rod in a continuous manner, alternating in the forward direction or in the reverse direction. A stamp, comprising a rearward projecting stamp, is arranged at the front end of the piston rod. ~~It comprises a rearward projecting edge. For the purpose of removing~~ To remove a used or empty cartridge, the stamp is retracted with the piston rod until the edge of the stamp rests on the gripping elements arranged in the base of the cartridge
30 holder. The retraction of the stamp ~~occurs~~ can be achieved either by pulling at the rear end of the piston rod or by multiple pressing of a retraction lever, which displaces the piston rod in a rearward direction. By ~~a renewed~~ pressing of the retraction lever, the stamp presses against the gripping elements and detaches the ~~same~~ gripping elements from their anchoring in the cartridge wall. The cartridge can thus be removed without any obstructions from the

5 cartridge holder. The removal of a used or empty cartridge from the inventive cartridge gun is thus substantially simplified, when compares to cartridges guns or presses known in the art ~~with the cartridge gun in accordance with the invention, so that an exchange of the cartridges is facilitated.~~

A further advantage of the inventive cartridge gun ~~in accordance with the invention~~ is
10 that the actuating device allows a displacement of the piston rod in a continuous manner in the forward and rearward direction. One problem with conventional cartridge guns or presses ~~occurring during the pressing out of pasty materials~~ is that a pressure builds up ~~in~~ within the cartridge during the advancement of the stamp, which is attached to the piston rod ~~and the pressing against the piston~~. After the emission of the quantity of pasty material within the
15 cartridge mass corresponding to the path of advancement, a subsequent dripping of the pasty material within the cartridge usually occurs ~~by~~ due to the release of the pressure within the cartridge relief, so that thus achieving precise dosing and apportioning of the pasty material is difficult only possible with difficulty. The subsequent dripping of the pasty material can soil the ambient environment. The pressure build-up within the cartridge which causes the
20 subsequent dripping is caused ~~on the one hand~~ by the fact that the medium to be pressed out from the cartridge comprises a certain compressibility and ~~on the other hand~~ also by a certain elastic deformability of the cartridge. Subsequent dripping can be avoided when the pressure within ~~in~~ the cartridge is reduced ~~in time~~. This reduction of pressure can be achieved by withdrawal of the stamp ~~in time~~ before the pressure begins to build up within the cartridge.
25 Once sufficient pasty material has been released from the cartridge attached to the inventive cartridge gun ~~pressed out~~, a short pressing of the retraction lever is pressed slightly sufficient, as a result of which resulting in the stamp is being slightly withdrawn, and ~~no~~ the force ~~on the part of~~ from the stamp cease to act ~~acts~~ on the piston any more. The problem of subsequent dripping ~~can be avoided with the cartridge gun in accordance with the invention.~~

30 ~~[0010] Further advantages of the invention follow from the dependent claims and the description below, in which the invention is explained in closer detail by reference to an embodiment schematically shown in the drawings.~~

~~[0011] The figures show as follows:~~

5 **BRIEF DESCRIPTION OF THE DRAWINGS**

The present invention will be described in greater detail in the following detailed description, with reference to the accompanying drawings, wherein:

Fig. 1 shows a side view of an embodiment of a cartridge gun;

Fig. 2 shows a cross-sectional side view of the cartridge gun shown in Fig. 1, with an
10 inserted cartridge in a sectional view;

Fig. 3 shows a cross-sectional side view of the cartridge gun shown in Fig. 2, with an
enlarged illustration of section according to Fig. 2 with the cartridge holder and the actuating
device for displacing the piston rod; and

Fig. 4 shows cross-sectional side view of the cartridge gun shown in Fig. 2, with an
15 enlarged illustration of section of the cartridge holder, with the actuating device for
displacing the piston rod, and with a completely retracted stamp.

DETAILED DESCRIPTION OF THE INVENTION

~~[0012] The same reference numerals were used for the same elements in the figures.~~
20 ~~Declarations for the first time relate to all figures, unless mentioned expressly otherwise. A~~
cartridge gun comprising a cartridge holder is provided. The inventive cartridge gun has the
advantages of weighing lighter than cartridge guns or presses known in the art and being able
to substantially eliminate the subsequent dripping of materials released from the cartridge due
to the pressure build-up within the cartridge when the cartridge is pressed. The terms of front
25 and rear relate to the cartridge gun in which the cartridge holder is arranged at the front, and
rear means the opposite end.

~~[0013]~~ Fig. 1 schematically shows a side view of an embodiment of a cartridge gun 1. The
cartridge gun 1 comprises a housing 7, ~~with~~ a grip 2, and a cartridge holder 3. The housing 7
comprises a piston rod 4, and an ~~The~~ advancement and retraction device for displacing the
30 piston rod 4 is arranged in the housing 7, which device and the device can be actuated by way
of a pressure or advancement trigger 8 triggers. The piston rod 4 is moved forward a short
step towards the front of the cartridge gun 1 with each pressure movement on advancement
trigger 8, and it is moved a short step backward towards the rear of the cartridge gun 1
following a pressure movement of the a retraction trigger 9. The term “front” refers to the

5 area where cartridge holder 3 is arranged on cartridge gun 1, as shown in the accompanying
figures, and the term “rear” refers to the opposite end of the “front” of cartridge gun 1. A
stamp 5 forms the front end of the The piston rod 4 comprises a stamp 5 at its front end and
the rear end of the piston rod 4 is provided with a holding knob 6. The holding knob 6 can be
used to withdraw the piston rod 4 or it can be used to push ~~pushed~~ into the cartridge up to the
10 cartridge floor.

~~[0014]~~ Fig. 2 shows a cross-sectional view of a the cartridge gun 1 shown in Fig. 1, with a
cartridge 10 inserted into the cartridge holder 3. The cartridge 10 is shown without any
content and without the cartridge floor which forms the piston. In the embodiment shown in
Fig. 2, the The piston rod 4 has been fully withdrawn. With each pressure movement on the
15 advancement lever 8 in the direction towards the grip 2, the piston rod 4 is pressed slightly
forward into the cartridge 10 in the direction ~~of~~ towards nozzle 11. ~~In~~ During this process,
the stamp 5 presses against the piston in the cartridge (not shown) and presses the pasty
material situated in the cartridge 10 outwardly through the nozzle 11. A short pressure
movement on the retraction lever 9 in the direction towards the grip 2 pushes the piston rod 4
20 a small step backwards towards the rear of the cartridge gun 1, whereupon the piston in the
cartridge 10 is relieved and the pressure in the cartridge 10 is reduced. Subsequent dripping
of any pasty material within the cartridge 10 can thus be avoided.

~~[0015]~~ Fig. 3 shows an enlarged cross-sectional view of Fig. 2, ~~with~~ illustrating the cartridge
holder 3 and ~~the~~ an actuating device arranged in housing 7 for displacing the piston rod 4.
25 The cartridge holder 3 ~~consists of~~ comprises a cylindrical base 12 with an annular groove 14.
The outside diameter of the annular groove 14 corresponds to the outside diameter of a
cartridge 10, so that the ~~same~~ cartridge 10 can be inserted effortlessly into the annular groove
14 of base 12, and rests on the outside wall of annular groove 14. An axially extending,
graduated hole bore 15 in the center of base 12 is used for receiving a hub 16. ~~Gripping A~~
30 plurality of gripping elements 17 are clamped between the edge 20 of the collar 18, which is
formed by the annular groove 14, ~~and the~~ hole bore 15, and ~~the~~ hub 16. Said gripping
elements 17 can be individual claws projecting into the annular groove 14, wherein ~~whose~~
free ends of gripping elements 17 reach up to the outside wall of annular groove 14. In the
illustrated embodiment as shown in Fig. 3, the gripping elements 17 are formed by the jacket

5 surface with longitudinal slots of an element in the shape of a truncated cone. The upper
cover surface of the truncated element comprises a bore in such a way that the remaining
circular ring of said cover surface can be clamped between hub 16 and the edge 20 of the
collar 18. Strip-like gripping elements 17 are obtained by the slots in the jacket surface of the
truncated element, wherein the ~~whose~~ free ends project into the annular groove 14 in the
10 direction ~~of~~ towards the housing 7 of the cartridge gun 1 up to the outside wall of the annular
groove 14 and can be provided with a sharp edged or pointed configuration. In order to
ensure sufficient stability and elasticity of the resilient gripping elements 17, ~~it is~~
~~advantageous when such~~ gripping elements 17 are made of, but not limited to, spring steel
and the like. ~~Other materials for producing the gripping elements are possible.~~ Once a
15 cartridge 10 is pressed into the base 12 of the cartridge holder 3, the gripping elements 17
press with their free ends against the inside wall 13 of the cartridge 10, wherein the cartridge
10 is securely held ~~and hold the same~~. As soon as stamp 5 is used to press against the piston
in the cartridge 10, a pressure is also exerted on the cartridge 10, resulting in a pressing action
of which tries to press the cartridge 10 from the cartridge holder 3. This pressing action is
20 prevented ~~by~~ because the gripping elements 17 ~~which~~ tightly grasp the side wall of the
cartridge 10 ~~slightly under this pressure~~.

~~[0016]~~ A As shown in Fig. 3, a forward drive disk 21, which is tiltable, ~~in the known manner~~
is attached ~~in~~ to the housing 7, with the piston rod 4 projecting through its opening. The
opening on the forward drive disk 21 is slightly larger than the diameter of the piston rod 4,
25 so that the forward drive disk 21 is freely displaceable along the piston rod 4. The forward
feed disk 21 is pressed to the back by the pressure spring 22. The grip ~~[[4]]~~ 2 comprises an
advancement trigger 8 which acts upon the lower side of the forward drive disk 21. As a
result of actuating the advancement trigger 8, the forward drive disk 21 is tilted ~~at first~~
forwardly until it presses against the piston rod 4 and gets jammed ~~there~~, and it is further
30 pressed forward against the pretension force of the pressure spring 22. It forwardly moves
the piston rod 4 with the stamp 5. A further tiltable drive disk 24 for the rearward
displacement of the piston rod 4 is attached ~~in~~ to the housing 7. This retraction drive disk 24
is pressed forwardly by the pressure spring 22. A retraction trigger 9 which can be swiveled
about an axis 19 is arranged in the housing 7 for the reverse displacement of the piston rod 4,

5 which ~~trigger~~ acts upon the lower side of the retraction drive disk 24. The retraction drive disk 24 is tilted in a rearward manner ~~at first~~ by actuating the retraction trigger 9 until it presses against the piston rod 4 and gets jammed ~~there~~, whereupon it is pushed further back against the pretension force of the pressure spring 22, ~~with the same moving whereby~~ the piston rod 4 with the stamp 5 moves towards the rear of the cartridge gun 11 to the back.

10 ~~[0017]~~ The In Fig. 3., the piston rod 4 and the cartridge 10 are is situated in the illustration shown in the retracted positions position, as is the case in a newly inserted cartridge 10. By pressing the advancement trigger 8, the piston rod 4 with the stamp 5 is pressed continuously in the forward direction into the cartridge 10 and against the piston of cartridge 10, ~~with whereby the material within the cartridge 10 are pressed and ejected from the same pressing~~

15 ~~the pasty mass from~~ the cartridge 10. Once sufficient material has been ejected from cartridge 10, applying slight pressure or pulling a short pressure on the retraction trigger 9 towards the rear of cartridge gun 1 is sufficient ~~in order to~~ move the piston rod 4 slightly backwards or towards the rear of cartridge gun 1. As a result of pulling the retraction trigger 9, ~~no the pressure acts acting~~ on the piston within the cartridge 10 by stamp 5 is substantially

20 eliminated, and the excess pressure in cartridge 10 is reduced, thus preventing subsequent dripping of the material within the cartridge 10. The stamp 5 which is arranged at the front end of the piston rod 4 comprises a plane front surface and a rearwardly projecting edge 25 which is slightly sloped at its end 26. The sloping corresponds approximately to the inclination of the gripping elements 17. ~~For the purpose of removing or exchanging To~~

25 remove or exchange an empty or used cartridge 10, the piston rod 4 is pushed ~~right to the back~~ towards the rear of the cartridge gun 1. This action can be ~~made~~ achieved manually by pulling the piston rod 4 to the back on the knob 6 until the stamp 5 rests with its edge 26 on the gripping elements 17. The retraction of the piston rod 4 can also be achieved by actuating

30 ~~occur in such a way that~~ the retraction trigger 9 ~~is actuated~~ several times until the stamp 5 is fully retracted. ~~For removing To remove~~ To remove the cartridge 10 from the cartridge holder 3, the cartridge 10 is held ~~with~~ by one hand of the user, while actuating ~~and~~ the retraction trigger 9 ~~is actuated again with~~ by the other hand. ~~The This~~ This action causes the sloping end 26 of the edge 26 of stamp 5 to press ~~presses~~ against the resilient gripping elements 17, which are ~~thus~~ pressed away from the inside wall 13 of the cartridge 10, and the cartridge 10 can be removed

5 from the cartridge holder 3. As soon as the stamp 5 has been pushed in a forward direction
towards the front of the cartridge gun 1 again, the resilient gripping elements 17 return to
their initial position as a result of their elasticity, which means that the free ends of the
gripping elements 17 reach up to the inner edge of the circular groove 14 again.

[0018] Fig. 4 shows an enlarged cross-sectional view of the housing 7 with the cartridge
holder 3 and the actuating device for displacing the piston rod 4 when the stamp 5 is fully
10 retracted. The illustration Fig. 4 further shows the situation in which the retraction trigger 9
has been in a pressed position and the gripping elements 17 are pressed from the rearward
projecting edge 25 of the stamp 5 against the inside, and thus release releasing the boundary
region of the annular groove 14, as a result, of which the cartridge 10 can be withdrawn from
15 the cartridge holder 3.

[0019] The embodiment embodiments shown in the drawings Figs. 1-4 illustrate shows a
cartridge gun 1 in which the housing 7, with the grip 2, and the cartridge holder 3 is of an
integral configuration and is may be, made of plastic, for example. In another embodiment, It
is also possible that the cartridge gun 1 is composed of includes individual parts and the base
20 12 of the cartridge holder 3 is screwed onto the face side of the housing 7.

While certain embodiments of the present invention have been described, it will be
understood that various changes may be made in the above invention without departing from
the scope of the invention. It is intended that all matter contained in the above description or
shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting
25 sense.

ABSTRACT OF THE DISCLOSURE

The ~~present invention teaches a~~ A cartridge gun (1) ~~with a cartridge holder is~~
provided. The cartridge gun comprises a cartridge holder, (3), ~~comprising a plurality of~~
resilient gripping elements (17), a displaceable piston rod (4) for moving a piston in a
cartridge, (10) and an actuating device for displacing the piston rod (4). The cartridge holder
10 (3) comprises a cylindrical base (12) for receiving the floor region of a the cartridge (10) in
which the gripping elements (17) project radially outwardly from the center of the cartridge
holder (3) in the direction ~~of~~ towards the housing (7) into an annular groove (14) of the base
(12) up to the outside wall of the annular groove (14) in the base (12) and are held in the
center of the base (12) by means of a hub (16). Means (5, 25) are further arranged at the front
15 end of the piston rod which are designated to press the ends of the resilient gripping elements
(17) in the direction ~~of~~ towards the housing (7) when the piston rod (4) is fully retracted,
allowing the removal of ~~and to thus release~~ the cartridge from the cartridge gun ~~for removal~~.

Figure 3

5 **Reference numerals**

- 1 — Cartridge gun
- 2 — Grip
- 3 — Cartridge holder
- 10 4 — Piston rod
- 5 — Stamp
- 6 — Knob at the end of the piston rod
- 7 — Housing of the cartridge gun
- 8 — Advancement trigger
- 15 9 — Retraction trigger
- 10 10 — Cartridge
- 11 — Nozzle
- 12 — Cylindrical base
- 13 — Inside wall of cartridge
- 20 14 — Annular groove
- 15 — Graduated hole bore
- 16 — Hub
- 17 — Gripping element (gripper)
- 18 — Collar adjacent to hub
- 25 19 — Axis lever 9
- 20 — Edge of collar adjacent to hub
- 21 — Forward drive disk
- 22 — Pressure spring
- 23 — Axis lever 8
- 30 24 — Retraction drive disk
- 25 — Collar on stamp
- 26 — Incline of collar 25